Adopting MakerEd Mindset

The Role of Libraries
Who we are:

- Value-added supplier of emerging technology for STEM/STEAM/ MakerEd
- Vetting of vendors and innovative tech products with educational value
- Tech Bundles design/customization
- Focus on teacher education and the meaningful use of innovative EdTech and MakerEd tools

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Starting with a question:

What are your pain points in introducing STEM/STEAM and MakerEd products to your school community?

Go to this link to enter your responses:

PollEv.com/edithc441
And another question:

What’s the deal with Frisbee here?
A Bit of Housekeeping
Let’s grow our own AHA! Tree

At any point during the workshop you have an AHA! moment, write it down on a post-it note to grow our own AHA! tree
MakerEd

Meaningful and Sustainable
Waves Interference

Wave #1 - Reduction of “non-core” subjects and teachers: aesthetic, vocational skills, physical ed, etc. (resulting from recession hit and the accent on theoretical forms of education with standardised tests)

Fact: Funds have been cut in more than 80% of US school districts since 2008. The very first programs to go are often disciplines such as music, art and foreign languages.

Wave #2 - From Maker Movement (DIY and learning through doing in a social environment) to MakerEd (an interdisciplinary approach to active learning)

Fact: 55% of US school libraries offer MakerEd programs. 92% librarians organize and run MakerEd. 32% of MakerEd activities are tied directly to the curriculum
K-12 Funding Fell Sharply After Recession Hit

Change in funding per pupil compared to 2008, inflation adjusted

Note: Excludes Hawaii and Indiana due to lack of data.
Source: CBPP analysis of U.S. Census Bureau, “Public Education Finances: 2015.”
From Garage to Classroom Corner

- Hackerspace, Garage
- Community Makerspace
- Innovation Center
- Tech Incubator
- Center of Gravity
- FabLad
- Discovery Zone
- Library Makerspace
- Classroom Makerspace
- Mobile Makerspace
- Portable Makespace
- Maker Station
MakerEd: Experiential, Engaging, Exciting

MakerEd - a technological and creative learning revolution:

- Returns to “doing” - using hands, brains, hearts, and tools
  - Requires active use of tech tools, not passive consumption
    - Fosters creativity and collaboration safely
    - Utilizes learning power of experimentation and mistakes
    - Encourages integration of different kinds of skills

The opportunity to transform education

The pleasure of real learning
Evidence of Changes and Engagement

- Changing classroom/school atmosphere
  - Shifts in educator roles: *Sage on the Stage* > *Guide on the Side* > *Experienced Learner*
  - Going out of the comfort zone
  - Students ownership of learning
    - Students across grade levels sharing knowledge with younger students
  - From first adopters to vibrant community
    - Classroom teachers/librarians using their expertise to apply for and win grants while collaborating with colleagues to budget for new tools

- Encourages Entrepreneurship and Compassion
  - School store with products from FabLab and Makespace
  - Middle/High school entrepreneurs
    - 3D-print projects: prosthetic arms, grad gifts
    - Raspberry Pi projects: light fire alarm for deaf kids
New tech as a concentration of creativity (and representation of current stage of innovative economy)

New tech tools are accelerating learning and supporting new approaches in education: Active, Inquiry-, Project-, Problem-Based learning, MakerEd, STEM/STEAM, Learner-Centered...

Lots of tools, lots of providers

Buying what’s right for your educators and students to be used

Decision is a joint effort: educators, curriculum, department leaders and coaches, tech support, and students
Our Big WHY
Bringing Innovative Tech to Teacher’s Toolbox...

...to advance evolving pedagogy through meaningful use of STEM/STEAM/MakerEd innovative tech tools and make students future-ready
<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>CRITERIA</th>
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<tbody>
<tr>
<td>Usability / Functionality</td>
<td>Testing for durability and matching with requirements. Consider all factors, like consumability and big parts for small hands</td>
</tr>
<tr>
<td>Vendor Viability / Support</td>
<td>What is its track record? Stability? Negotiate terms and pricing</td>
</tr>
<tr>
<td>Educational / Pedagogy</td>
<td>Should it be added to a teacher’s toolbox? Does it illuminate learning as a whole? Does it teach more than a tech skill?</td>
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<td>Is it modular and flexible enough to fit in as part of a system?</td>
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<td>Does it have multiple points of entry for students and teachers with different expertise levels?</td>
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<td>Does it have high creative potential? Is it easy to implement?</td>
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<td>Does it have a physical component to help support hand-brain coordination and development?</td>
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3 Rs + 4 Cs

Tech is a learning tool, not a tool to learn
Teaching with MakerEd Tech: What to Consider

1. How to find right tech products to support the teaching goals?
2. How to use different products matching different teaching styles?
3. How to solve the emotional conflicts of technophobia, or shifting authority?
4. How to grow the MakerEd mindset in a classroom setting?
5. How to use MakerEd tech tools in teaching core curriculum subjects?
6. How to assess the learning and create conditions to maximize the learning outcome?
Using Tech Tools throughout Curriculum

- reading
- spelling
- maze-making
- creative writing
- movie production
- art
- foreign languages
- choreographing dance routines
- social studies
- programming
- optics
- math
- geometry
The Role of Libraries
School Libraries as Centers of Innovation

- Innovative space for all types of teaching and learning
- Piloting student-centered, engaged learning and use of tech tools
- Preparing students for the future
- Information hub
- Resource management
- Professional Development/Learning
- Instructional technology integration
- Models of innovative learning
- Try first
- Lending tech to teachers (and students)
RI Program
RI Questions

What approach to use?
- Try First
- Objectives and Brief Instruction
- Complete Step-by-Step Instructions
- Hybrid

How to teach English and Math using MakerEd tech tools?

What tech to select and why?

How to measure what students learn?

Who can help?

What are students’ roles?
Your Own Journey
Issues Occuring

1. Teaching with MakerEd Tech Tools
   a. Finding right tech products and matching with teaching goals
   b. Different teaching styles and learning goals
   c. Using MakerEd tech tools in teaching core curriculum subjects
   d. Assessment of learning

2. Compatibility
   a. Existing devices on-site
   b. Level of expertise
   c. Dealing with suggestions

3. Time and Money:
   a. Time to research a broad (and growing) collection of products
   b. Assessment of manufacturers
   c. Proper budgeting
      i. Money well-spent (the most expensive product is the one that is not used)
      ii. Special pricing for end-of-life products
      iii. Budget planning for grant writing (time-sensitive)

4. Community strength
   a. First Adopters and First Supporters
   b. Administrative support
How to Start your Own Journey

- Create experiences to explore new tech tools, come out of the comfort zone and reflect on your own fearless learning
- Link MakerEd to formal concepts/standards and develop an educational context to encourage MakerEd mindset
- Start small and promote the success
- Identify first adopters and support their needs, build the community for learning and sharing
- Design a project:
  a. Projects with connection to real life problems and student’s interests
  b. Mix different products and projects in one classroom (not 1:1)
- Encourage (organize) students’ ownership to develop their full capacity, creativity, and confidence:
  a. Students teaching, cross-grade connections
  b. Appreciate increasing competencies and strengths of students
  c. Allow individual experimentation (lend products to students)
- Tool selection to support MakerEd
  a. Look at tech as a tool, and at tools as a system
  b. Be flexible, match tools with experience and background (wide range of MakerEd Tech and settings)
- Continuous support and sharing
  a. Allocate time and resources
  b. PD/PL for MakerEd (guides, lesson activities, workshops, imitation of experience, pilot programs...)
Frisbee Lessons

Flying non-tech object (= you can start with anything, but sky is a limit)

When it’s coming to you, you have to catch it (= opportunity)

You can’t do it alone, but one should make an initial play (= initiative)

Collaboration, team effort (= building community)

If you fail, you start again (= persistence)

Drive, engagement, fun (= enthusiasm)

You can start small and reach far, really far...
Friendly Tech for Petting Zoo

- Ozobot
- Robo Wunderkind
- Root
- SAM Labs
- Unruly Splats
- Systemic approach
Reflection

What do you know today, that you didn’t know yesterday, that will serve you tomorrow?
Eduporium Makes it Easier

- Trusted source and resource of innovative EdTech products focusing on the meaningful use of STEM/STEAM/MakerEd tools
- Vetting of vendors/innovative tech products with educational value
- Bundle design/customization (+ activities + instructions + PD) to meet educators and students needs
- Sole source, MBE Certified (MA, RI, NY, NJ, Federal Database), PEPPM
- Tech petting Zoo, train the trainer, online and in-person workshops - complementing what you do
- Sharing best practices and findings (SM, website, conferences…) building community of educators
Let us know how we can ease your efforts